Lisa Offringa

Medicinal Plants of Northern Thailand for the Treatment of Cognitive Impairment in the Elderly





Medicinal Plants of Northern Thailand for the Treatment of Cognitive Impairment in the Elderly



Lisa Offringa Stanford Prevention Research Center Stanford University School of Medicine Palo Alto, CA, USA

ISSN 2192-1229 ISSN 2192-1210 (electronic)
ISBN 978-3-319-10240-5 ISBN 978-3-319-10241-2 (eBook)
DOI 10.1007/978-3-319-10241-2
Springer Cham Heidelberg New York Dordrecht London

Library of Congress Control Number: 2014949348

© Springer International Publishing Switzerland 2015

This work is subject to copyright. All rights are reserved by the Publisher, whether the whole or part of the material is concerned, specifically the rights of translation, reprinting, reuse of illustrations, recitation, broadcasting, reproduction on microfilms or in any other physical way, and transmission or information storage and retrieval, electronic adaptation, computer software, or by similar or dissimilar methodology now known or hereafter developed. Exempted from this legal reservation are brief excerpts in connection with reviews or scholarly analysis or material supplied specifically for the purpose of being entered and executed on a computer system, for exclusive use by the purchaser of the work. Duplication of this publication or parts thereof is permitted only under the provisions of the Copyright Law of the Publisher's location, in its current version, and permission for use must always be obtained from Springer. Permissions for use may be obtained through RightsLink at the Copyright Clearance Center. Violations are liable to prosecution under the respective Copyright Law.

The use of general descriptive names, registered names, trademarks, service marks, etc. in this publication does not imply, even in the absence of a specific statement, that such names are exempt from the relevant protective laws and regulations and therefore free for general use.

While the advice and information in this book are believed to be true and accurate at the date of publication, neither the authors nor the editors nor the publisher can accept any legal responsibility for any errors or omissions that may be made. The publisher makes no warranty, express or implied, with respect to the material contained herein.

Printed on acid-free paper

Springer is part of Springer Science+Business Media (www.springer.com)

Acknowledgments

I started this educational journey thinking I could not feel more deeply about preserving the environment, but the knowledge I gained through my education magnifies the enormous awe I feel in the presence of nature. I often say the lesson of a Ph.D. is not in the subject matter, but in the process. I feel the utmost gratitude for those who encouraged and guided me through this process.

My dissertation committee imparted on me great wisdom and support. Their advice and suggestions were an integral part of my work. During my committee meetings, I felt honored to have such great minds coming together to discuss my project. It has been a privilege to work under my advisor, Dr. Michael Balick. His years of work in the field of ethnobotany offered me access to knowledge from generations of economic botanists and extensive plant knowledge from his work with healers and people who live close to the earth. He established the Institute of Economic Botany at The New York Botanical Garden, which supports the endeavors of scientists to research and preserve plant knowledge. This is a monumental legacy I am humbled to join. He has been generous with his time, advice, and wisdom, and through his actions in this field, he taught me about hard work, integrity, and kindness. Dr. Ina Vandebroek is an inspiration and great source of ethnobiological knowledge related to field methodology, ethics, and research design. Her gentle critiques of my work have been vital to my growth as a scientist. She is a teacher and a friend and has been a constant source of support for me. Dr. Edward Kennelly is a gifted phytochemist, and both he and many people in his laboratory assisted me through the toil of plant-based bioassays. His assistance in the theoretical and experimental phytochemistry of my work is greatly appreciated. Dr. Jim Miller was essential in advising me while I was obtaining my research permits in Thailand. He has immense knowledge of all aspects of an ethnopharmacological project and was generous with his knowledge and wisdom as I navigated some difficult situations. Dr. Liesl Jones provided her knowledge of the brain and in vivo studies to my work. Her advice on my project was always rational and intelligent. She is an inspirational and accomplished person and gives sage insight on being a woman scientist. Dr. Raj Kalapatapu contacted Dr. Balick looking at natural treatments for geriatric psychiatry. His expertise in this area was invaluable to my project design and the interpretation of my results.

vi Acknowledgments

I am exceptionally grateful for the support and assistance I received from people at The Graduate Center and Lehman College. In the biology office at The Graduate Center, Joan Reid endured years of my incessant questions about everything, as I'm sure she did from many other graduate students. I am grateful for her patience and golden heart. Dr. Laurel Eckhardt, our Executive Officer, has shown great leadership for our program. At Lehman College, Dolores Vitanza consistently extended a helping hand and always with a smile. A number of other professors at Lehman College, who were not on my advisory committee but were anchors of support, were Dr. Joseph Rachlin, Dr. Dwight Kinkaid, and Dr. Dominick Basile. I am grateful to them for their assistance and enduring encouragement over the years. David Cain allowed me to work in the greenhouse, which was more fun than work for me. I would also like to thank the Office of the President at Lehman College for their legal assistance while I obtained my research permits in Thailand.

The New York Botanical Garden is a world-renowned institution where I feel honored to work. I owe my gratitude to Dr. Larry Kelly, the Director of Graduate Studies, for his direction and leadership, and Dr. Amy Litt, who gave me advice, guidance, and encouragement throughout my time as a graduate student. I extend my heartfelt gratitude to Michelle Meesawan, Dr. Balick's assistant. She handled my needs and requests with grace, and a smile. She is my connection to Thailand and a wonderful person with *jai ngaam*, or a beautiful heart.

My studies in Thailand spanned over 4 years, and many people there made this possible for me. Dr. Weerachai Nanakorn was my original contact at the Queen Sirikit Botanic Garden and helped to facilitate my research permits and collaborations. Dr. Konganda Chayamarity was my official collaborator at the Queen Sirikit Botanic Garden. Dr. Santi Wattana assisted me with acquiring my research permits through the National Research Council of Thailand (NRCT) and helped guide me through that process. At the NRCT, Ms. Pannee Panyawattanaporn from the Office of International Affairs and her assistants, Jeeranan and Surin, helped me with my reports and paperwork. Ms. Dussadee Siamhan at Thailand's National Center for Genetic Engineering and Biotechnology (BIOTEC) facilitated my short-term training agreement and provided me with the documentation I need to begin the anthropology portion of my research. Dr. Jintanaporn Wattanathorn, my official collaborator at Khon Kaen University, provided me the tools and training for conducting my in vivo studies. The students in her laboratory, namely Namwan, Thipkeaw, Elle, Nanan, Mee, and Sara, treated me like family. They helped me in the lab and made sure I enjoyed my time in Khon Kaen. The technicians in her lab assisted me with my research and kept me jai yen, or cool hearted, when I felt stressed. The gratitude I feel toward Ajan Panee Sirisa-ard is infinite. She was my contact at Chiang Mai University, and she introduced me to many of the healers I interviewed. She opened her laboratory to me to conduct my in vitro bioassays and treated me like her student, and like family. She exemplifies the kindness found in Thai culture and the Mettā of Buddhism. The students in her lab were wonderful: Jum helped me in the laboratory, Jack assisted me with the equipment I needed, and Dr. Wisinee Chanmahasathien advised me on my bioassay techniques. At the Queen Sirikit Botanic Garden, Wittaya Pongamornkul accompanied me on collecting trips Acknowledgments vii

and assisted me with botanical identification. Dr. Piyakaset Suksathan, Dr. Methee Wongnak, and Dr. Suyanee Vessabutr also assisted me at the QSBG. Ratchuporn (Spanuchat) Suksathan, or Nok, assured my comfort while I stayed at the botanical garden and guided me through many parts of living in Thailand, including being a graduate student. Finally, I am so thankful for my research assistant, photographer, driver, translator, and dear friend, Jiratthitikaan Tumakaew, or Ji. She navigated this project with me and counseled me on all things Thai. During interviews, she knew what I was thinking, what to ask, and how to ask it and became a student to many of the healers we visited. I could not have done this research without her.

My two mentors from my post baccalaureate education were vital to my success in graduate school. My mentor at SFSU, Dr. Robert Patterson, is all I strive to become in a teacher. His love of plants is infectious and only paralleled by his rigorous, but devoted, expectations of his students. He has remained a friend and advisor in my work and in my life. Dr. Margareta Séquin, also at SFSU, revealed the world of plant chemistry to me. Her intelligence and enthusiasm make her an excellent educator.

I am grateful to the organizations that funded my work for their generosity and support. I received the CUNY Doctoral Student Research Grant, which allowed me to expand my fieldwork in Thailand and contributed to the expenses of my laboratory work. My education was partially funded by the CUNY Science Fellowship, the CUNY Plant Sciences Fellowship, the CUNY University Fellowship, and the CUNY Teaching Fellowship. I received The New York Botanical Garden Graduate Fellowship, which helped with my tuition costs. The Anne S. Chatham Fellowship in Medicinal Botany funded my fieldwork in Thailand and numerous visits to traditional healers. Finally, the Botany in Action grant, beyond assisting with funding my project, gave me the opportunity to meet other scientists and engage in sharing my work with the public, which is vital to garnering support for science and the natural world with people outside of academia.

This project was not possible without the traditional healers I interviewed. They were the primary resource for this study and became my mentors and friends. I owe them immeasurable gratitude, or *khob jai*, for sharing their knowledge and opening their homes, families, and hearts to me. They trusted me with the secrets of the forest which I hold with my spirit.

My family has provided encouragement on this path, in all of the twists and turns, ups and downs, and even sideways directions it has taken. My parents Jennifer and Pete Offringa and my brother Peter have given me unending support and believed in me when I did not think I could do it. Your love, guidance, and advice are the beacon that lights my way.

Contents

1	Introduction and Background	1
	Background	1
	Introduction	1
	History of Thai Traditional Medicine	2
	The Record of Medical Ethnobotany in Thailand	2
	Theoretical Context	6
	Cognitive Impairment and Dementia	8
	Prevalence and Conventional Treatment of Dementia in Thailand	11
	Natural and Cultural History of the Study Site	12
	Thailand	12
	Chiang Mai and the Lanna Kingdom	14
	Khon Muang	15
	Conclusion	16
	References	17
2	Fieldwork Methodology	23
	Introduction	23
	Introduction	23 24
	Selection of Traditional Healers for Interviews	
	Selection of Traditional Healers for Interviews	24
	Selection of Traditional Healers for Interviews	24 24
	Selection of Traditional Healers for Interviews	24 24 24
	Selection of Traditional Healers for Interviews	24 24 24 25
	Selection of Traditional Healers for Interviews Types of Healers in Thai Traditional Medicine Selection of Participating Healers Description of the Interviewed Traditional Thai Healers Methods for Data Gathering Interview Protocol	24 24 24 25 27
	Selection of Traditional Healers for Interviews	24 24 25 25 27
	Selection of Traditional Healers for Interviews Types of Healers in Thai Traditional Medicine Selection of Participating Healers Description of the Interviewed Traditional Thai Healers Methods for Data Gathering Interview Protocol Interview Questionnaire and Development	24 24 25 27 27 27
	Selection of Traditional Healers for Interviews Types of Healers in Thai Traditional Medicine Selection of Participating Healers Description of the Interviewed Traditional Thai Healers Methods for Data Gathering Interview Protocol Interview Questionnaire and Development Plant Identification and Voucher Collection	24 24 25 25 27 27 29 31
	Selection of Traditional Healers for Interviews Types of Healers in Thai Traditional Medicine Selection of Participating Healers Description of the Interviewed Traditional Thai Healers Methods for Data Gathering Interview Protocol Interview Questionnaire and Development Plant Identification and Voucher Collection Ethics of Ethnobotanical Research	24 24 25 27 27 29 31 33